

E-Governance Transparency in Brazil – The Lack of Usability Is Detrimental to Citizenship

Cayley Guimarães, Leandro Daniel Reis Silva,
Diego Roberto Antunes, and Rodrigo Formighieri

Informatics Department, Federal University of Paraná, Curitiba - PR – Brazil
PRODEMGE, Belo Horizonte – MG – Brazil
prof.cayley@yahoo.com.br, leandro.daniel@hotmail.com,
drantunes@gmail.com, formighieri@bol.com.br

Abstract. Brazilian law requires that all cities with over 10.000 habitants divulge via Internet information regarding budgetary and financial information. Such information is an acquired social right that provides an arena in which to debate, demand for rights to be implemented, review policies and practices, among others, to guarantee that transparency and citizenship rights are respected. The transparency (government accountability) such mandatory e-governance (democratic, quality tools for State-Citizen interaction) information is still elusive. Only 14 percent of the cities required do so; and only 75 percent of those who divulge do it via Internet. This research surveyed the sites for availability and compliance with the law. It also analyzed the usability (both via Heuristic Evaluation - of 15 sites; and User Testing – with 5 users performing 4 tasks each on 3 different city sites). This research shows a direct link between the lack of usability and the lack of transparency and citizenship.

Keywords: E-Governance, Transparency, Usability, Citizenship.

1 Introduction

The Brazilian Federal Constitution from 1998 [4], in its 5th article, incise XXXIII says that: “[...] everyone has the right to receive from public agencies information of her particular, collective or general interest, that will be provided within the time frame of the law, under penalty of liability, except for those information whose secrecy is essential to the security of society and the State”. Regulating Law 12.527 [22] states that all municipalities with a population of over 10,000 habitants must divulge via Internet information regarding budget and financial information. It is very important that an acquired social right be reflected in the country’s carta magna. This gives the society an arena in which to debate their information needs; a basis from which to demand for rights to be implemented; an opportunity to review policies and practices among others, to guarantee that the citizenship rights are respected [21].

E-Governance, focused on the interaction between the State and the Citizen [18] is more than the automation of the processes, but a change in the manner which such interaction acquires quality, transparency, democratic participation and accountability

[15]. The Brazilian government, thus, launched the Programa Brasil Transparente (PBT) – Transparent Brazil Program – establishing the implementation of such civil right [3]. Transparency is related to government accountability, and allows citizens to become aware of government spending, thus contributing to reducing corruption and bribery, among others.

Information dissemination along with visibility into government actions and disclosure of public resources spending allow people to partake in the political scenario by engaging in issues that affect them. Such engagement gives the citizens a tool with which to see that public funds are used properly and according to their needs [9]. Detailed transparency allows for real citizenship exercise [1]. Transparency is a vital factor in strengthening the relations between government and citizens, and should take the form of complete, objective, reliable, relevant information in systems that have usability, are reliable, easy to access and comprehend [13].

However, according to IBGE demographic census (2010) [8], of the 5.562 cities in Brazil, 55% of them should divulge their data, but less than 14% of those required do so; and only 75% of those who divulge do it via Internet. Most of the available sites lack information organization, search engine, usability and, most importantly, they do not comply with the law mandated by the PBT [3]. The lack of availability of information about State actions compounds with the lack of organization of civil society in Brazil (a vicious cycle) to result in very low political participation in the welfare of the general population: the State becomes tutor of people, who are, thus, deprived of actual citizenship [16]. Information and knowledge are among the means that allow for democratic relations; and democracy consolidation depends on the effective access and use, by citizens, of information about State actions [6]. Information democratization is essential to the human collective [11].

Information systems in general, and transparency information systems in particular, should be useful, and must present good information organization and interactivity with human beings so that citizens may interact socially, thus enhancing the quality of life and social interaction [20]. This concept of Human-Computer Interaction is akin to the idea of usability. Usability involves the ability of the system to allow the user to be able to achieve her goals. [2] list some desired characteristics of usability: easy of use; ability to transform goals into feasible successful operations and execution of tasks; error perception and recovery among others. Those characteristics can be engineered. And, in the case of this research, these characteristics can be verified. A site that lacks usability will not be conducive of success, given that users will face difficulties to perform the desired tasks; and, sometimes, the user will not be able to achieve her goals. It follows that government sites aimed at e-governance and transparency may not dismiss usability: it is paramount that citizens are able to obtain information. Otherwise, the site would not have served its purpose, and lack of citizenship ensues.

This research shows a direct link between the lack of usability of the required sites for transparency and the lack of citizenship. In order to show such link, the following methodological steps were performed: a survey of the existing requirements, and the compliance of the sites with them; a survey of existing availability of information on government sites; an analyses cross-referencing such surveys, emphasizing the

discrepancies; user-centered heuristic evaluation and user test to characterize the information organization problems due to the lack of usability in existing sites and analyses correlating usability problems with real-life needs of the users for their citizenship.

2 Usability, Transparency and Citizenship

Citizenship concept is inspired by the Greco-Roman days from ideas of democracy; popular participation in the collective destinies; sovereignty of the people and individual liberty. Currently, full citizenship is contained in the social, political and civil rights, and imply in the citizen's participation of society's destiny [14]. To that end, people should be provided with relevant information in order to make judgments. A person who practices democracy cannot lack knowledge and information lest the citizenship exercise results incomplete because the citizen wouldn't integrally express her liberty and will.

According to [20] the technological revolution brought about by the Internet allows for instantaneous communication through space and time providing access to a new social and political reality, bringing about a new scenario of various new political strategies. The installation and development of democracy in the electronic space are now fundamental requirements of the possibility to discuss democracy in the modern society; without such democratizations, there is no effective democracy [17]. Three phenomena bring the Internet closer to a virtual public domain: "connection environment", "complexity of contents" and "Interaction systems" [7]. These spheres empower the citizen to exercise her political rights. As for the first (connection) people have a privileged space in which to expose publicly their opinions and a place where they can obtain relevant information. As for the complexity, a dense network of data and content of all sorts is available. Such complexity is not without cost: the use and understanding of such content requires access, technology know-how, and usability. As for interaction, the citizen has direct access to forum, peers, politicians, government agencies etc. We are thus entitled to conclude that the new technologies change the way people communicate, interact and obtain knowledge and information about government actions [5].

Information systems may be defined as a set of interrelated components that collect, store, retrieve, process and disseminate information [10]. They affect people's daily lives, and their successful interaction with people is linked to its integration with the social environment in which it is immersed. It is necessary that information systems be useful and present usability for their users, to the extent that such systems increase information quality, transparency, and means to assess the actions and services from the government and public institutions, enhancing new forms of participation and influence from the people in public policies, changing the very structure of the political organization of the society [20]. Usability involves the system's ability to allow users to easily attain their goals of interaction with the system [19]. [2] lists characteristics required from a system to have good usability: easy to use; easy to understand; easy to perform the desired tasks; to succeed in the execution of tasks;

allow the user to perceive and correct errors. Thus, an information system lacking usability will not be successful in aiding the users to achieve their goals. In the case of this research, the lack of usability in sites of e-governance transparency prevents the user to access information for citizenship exercise.

According to [20], the Internet is part of people's lives, providing means with which they can exercise their citizenship and democracy: enhancing quality, transparency and accountability of actions and services by the government and public institutions; enhancing new ways of public participation and influence in government practices and policies; and modifying the very structure of the political organization within society. The creation and development of democracy in the electronic arena are fundamental requirements of the possibility to talk about democracy in the current society, without whom, there is no effective democracy [17]. Thus, it is mandatory that citizens are capable of obtaining the information they consider relevant, otherwise, they won't achieve their transparency goals.

3 Methodology

In order to show that the sites lacked usability, and therefore was not providing the citizen with adequate information for their needs about citizenship in the form of lack of transparency of government acts, this research conducted three phases of usability evaluation. First, the authors studied the PBT (CGU, 2013) for consistency, clarity, guidelines and compliance by the cities to the requirements. This phase consisted of document analysis and site overview.

Then, the authors analyzed 15 different sites thus composed: 5 sites from small cities (less than 50,000 inhabitants – Rondonópolis, Macaíba, Três Rios, Goanésia, Colinas do Tocantins), 5 sites from medium cities (between 50,001 and 500,000 inhabitants – Alegrete, Mossoró, Rio Grande, Macaé, Ilhéus) and 5 sites from large cities (over 500,001 inhabitants – Goiânia, Porto Alegre, Belo Horizonte, Belém, Manaus) from all regions of the country using Jakob Nielsen's Heuristic Evaluation. Brazil is geopolitically divided into five regions (also called macroregions – North, Northeast, Central-West, South-east and South) by the Instituto Brasileiro de Geografia e Estatística (IBGE), composed by the States within them.

Finally, the authors conducted 15 traditional end-user studies with 5 users: each user performed 4 tasks (deemed important by the PBT (CGU, 2013)) each on a small, medium and large-sized city:

- A) What is the amount for the ISS (Imposto Sobre Serviço – Tax on Services) collected in the month of January 2013? ISS being one of the major sources of income for the cities.
- B) What is the net amount collected for the month of January 2013? This would give a ballpark figure of income and expenditure.
- C) What is the highest salary within the Environmental Department? Political job positions in Brazil are notorious for their high salaries.
- D) What are the communication channels to enquire about an specific information?

4 Results

4.1 Document Analysis

Law number 12527 regulates information access from incise XXXIII of article 5 from the Brazilian Constitution. Financial information is crucial for government Transparency. However, the law is incomplete, ambiguous, and vague. Several Income sources and expenditure transactions are not detailed, there is no specific orientation as to their nature, format of presentation, sources etc. – which opens a backdoor for those who do not won't to abide to the spirit of the law.

The vast majority of the sites that supposedly have the goal of divulging such information do not achieve them, be it because they lack structure, use proprietary software; require a lot of red tape for the common citizen to access among others. It was also observed that private contractors developed the existing sites. Most of the sites overviewed did not comply with the law even in the most basic information, such as address and contact. And all of the sites had some sort of usability problem that prevented the citizen to access the necessary information.

4.2 Heuristic Evaluation

The authors used Jakob Nielsen's heuristic evaluation [12], adopting the role of user to analyze each of the 15 sites, and found a total of 71 major errors. This means that if the same error appeared in different sites, such as “broken link”, then it was counted only once, as a representative of that category (otherwise the number of errors would explode without any additional information). As per their severity (frequency of occurrence, impact for the user task, persistence and impact) 2 of those errors were considered simple to correct (Label and Font Size); 17 required special attention (change of page without the respective change of page label, different types of files and formats for research results etc.); 40 errors required mandatory correction (Information hierarchy, broken links, data entry validation, mandatory fields etc.) and 12 of them were considered catastrophic – errors that have to be corrected otherwise functionality would not ensue, such as lack of an information required by law. Unfortunately, these are not novel errors: Usability is a well-known and studied concept that should have been widely incorporated into all sorts of systems by now; and still, the same types of errors keep appearing in the most important ones, preventing the user to achieve her desired goal.

Next, some examples of such errors for each heuristic is presented:

— H1 – Visibility of the State of the System:

- The link “Other Information” on the site of the city of Três Rios and others: the page opens with only the title, with no content

- H2 – Correspondence between the System and the Real World – no apparent error found
- H3 – User Control and Liberty:
 - For the site of the city Alegrete and others, it is impossible to navigate back to the home page
 - For the city of Goiania, the link to “Salaries” took too long to process, and there was no way for the user to cancel the operation
 - No “Contact us” link was found in several of the sites
- H4 – Consistency and Patterns:
 - Most cities did not provide the required information on government employees
 - Some links opened to other web pages, and some opened to files (usually PDF – no open source format)
 - Use of acronyms, without explanation of their meaning
- H5 – Error Prevention:
 - Overall, there is a lack of data-entry error treatment
 - There are two sites related to Transparency for the city of Goianésia
- H6 – Help for the user to recognize, diagnose and recover from errors:
 - Most links open to sites and/or files that are hidden. Once found, there is no direct way for the user to return to her point of origin
- H7 – Recognition, instead of Remembering:
 - Lack of adequate information hierarchy and adequate labels for actions
- H8 – Flexibility and Efficiency of Use:
 - Lack of links to access Money Allocation for infra-structure contracts
- H9 – Minimalistic Design and Aesthetics:
 - The user has to navigate many links to access the Ombudsman page
 - Most page are longer than the screen, and not adaptable to different platforms
 - Results from a search are not formatted
- H10 – Help and Documentation
 - In general, there is no help and/or documentation.

Figure 1 shows a graphic of the errors distributed among the heuristics (heuristic, number of errors and percentage). For example, for heuristic 1 (slice in light purple, there were 6 errors representing 9% of the total errors. Note that heuristic 5 – error prevention, had a total of 28% of the errors; along with heuristic 9 – Minimalistic design and aesthetics, with a total of 16%.

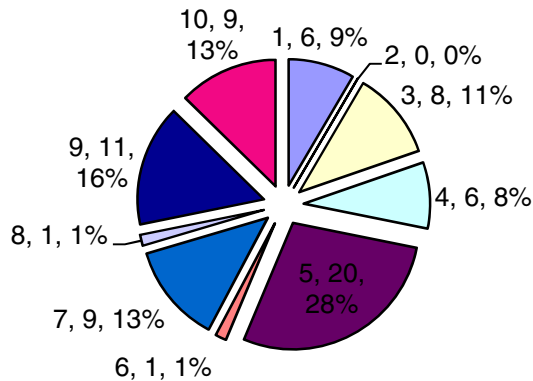


Fig. 1. Graph showing each heuristic (from center, clockwise), the number of errors and the percentage

4.3 End-User studies

The End-User studies followed traditional protocols (i.e. the participants were told what to do, not how; they were encouraged to Think-Aloud, they signed agreement forms). The sessions were not filmed though. At least two authors were present at each session (one as a facilitator and the others as observers). Five users participated in the Evaluation sessions: 3 females, and 2 males, aged from 26 to 61 years of age (average 45 years of age). All participants have graduate degrees in Medicine, Computer Science, Administration and Public Administration. Four participants work on the private sector (as mechanic, doctor, entrepreneurs) and one works in a government autarchy as a public administrator. The participants deal with public information on their daily lives, and their levels of education and computer skills are high. Albeit having profiles that would be considered skewed, the results below show that the participants still had problems overcoming the usability problems. The authors wonder what would happen if the participants were of a different (less sophisticated) profile.

User 1 – *Tasks for a site from a Large City* (Manaus – State Capital of Amazônia – North part of Brazil. Population: 1.8 Million):

- A) The user saw a link labeled ISS, but it turned out to be a link for business only. Back on the home page, the user navigated through **five different links**, without success. Lots of errors, and broken links appeared. The user complained about the design of the site. Back on the home page, the user chose the link for General Balance, but for 2013 there was only a note: “Information will be posted here”. **The user gave up after 10:45 minutes without finding the information.**
- B) On the home page, the user found the link “Relatório de Responsabilidade Fiscal” (Fiscal Responsibility Report). The report was divided bi-monthly. The user found the information of the collected tax for the 12 months, and thought that

those were the net balance. That is to say: **the user got the wrong information and took it to be the correct one.**

- C) After 4 navigations, and **05:40 minutes, the user gave up** on the task.
- D) The user found a “Contact Us” link, which was broken: “now, that’s embarrassing, isn’t it?” The user tried searching for a little longer, and a few links after gave up after **03:15 minutes.**

— *Tasks for a site from a Medium City* (Ilhéus – in the State of Bahia – Northeast part of Brazil. Population: 0.2 Million):

- A) The user found a link for Income, but **there was no information available.**
- B) There was no information about 2013. **The user gave up after 03:00 minutes.**
- C) In order to find out the salary, the user had to know the name of the employee.
- D) **The site didn’t enable the Contact link.**

— *Tasks for a site from a Small City* (Colinas do Tocantins – in the State of Tocantins – Central part of Brazil. Population: 17,984):

- A) The user found a link for Income, and found the information in **01:00 minute.**
- B) The user found the information in **46 seconds.**
- C) The user followed several links related to Environment, but did not find the information, and **gave up after 02:25 minutes.**
- D) The user didn’t find a link on the site for Transparency. The user went back to the site for the city and chose the contact link as a **possible** answer after 01:30 minutes.

User 2 – Tasks for a site from a Large City (Belém – State Capital of Pará – North part of Brazil. Population: 2.8 Million):

- A) The user navigated through 4 links, and concluded that there was no such information. The user **gave up after 05:00 minutes.**
- B) The user found the information in **30 seconds.**
- C) The user used the search option that opened a file outside the system. The user used the browser back button to return to the home page. **The user gave up after 09:20 minutes.**
- D) The user found the contact link, which had no e-mail or form, only a phone number, **after 01:50 seconds.**

— *Tasks for a site from a Medium City* (Macaé – in the State of Rio de Janeiro – Southeast part of Brazil. Population: 0.22 Million):

- A) The user found a link for Income, but **there was no information available.**
- B) There was no information about 2013. **The user gave up after 03:00 minutes.**
- C) In order to find out the salary, the user had to know the name of the employee.
- D) **The site didn’t enable the Contact link.**

— *Tasks for a site from a Small City* (Goianésia – in the State of Goiás – Central part of Brazil. Population: 15,678):

- A) The user found a link for Income, and found the information in **01:00 minute**.
- B) The user found the information in **46 seconds**.
- C) The user followed several links related to Environment, but did not find the information, and **gave up after 02:25 minutes**.
- D) The user didn't find a link on the site for Transparency. The user went back to the site for the city and chose the contact link as a **possible** answer after 01:30 minutes.

User 3 – Tasks for a site from a Large City (Belo Horizonte – State Capital of Minas Gerais – Southeast part of Brazil. Population: 2.47 Million):

- A) The user navigated back and forth through 10 links, and got “lost” several times. The user had to use the browser to return to the home page. The user concluded that there was no such information. The user **gave up after 10:00 minutes**.
- B) The user found the information in **02:30 minutes**.
- C) The user found a link for Salaries, but it only contained the minimum wage for each department. **The user gave up after 02:00 minutes**.
- D) The user found the contact link, which had telephone and chat as options.

– *Tasks for a site from a Medium City* (Rio Grande – in the State of Rio Grande do Sul – South part of Brazil. Population: 0.17 Million):

- A) The user found a link for Income, but was in doubt about the options. The random selected option opened a file outside the system: “too big”. The user tried the browser search. **The user found the information after 01:45 minutes**.
- B) The user repeated the steps from task A, and found the information at the end of the file in **02:50 minutes**.
- C) The user was lost for **07:00 minutes** before a link took him to an expired page.
- D) The “Online” link was broken. He then proceeded to navigate through the site to find a phone number after **05:00 minutes**.

– *Tasks for a site from a Small City* (Três Rios – in the State of Rio de Janeiro – Southeast part of Brazil. Population: 17,352):

- A) The user found a link for Analytical Balance, which generated a PDF file. The user browsed the file for **01:50 minute** before giving up. The user then used the **search tool from the browser to find the information**.
- B) The user browsed the PDF file found at the previous task and found the information in **01:36 minute**.
- C) The site offered only two links: government and news. The user found some spreadsheets with only names and numbers, **but wasn't sure what they meant**.
- D) The user found the “Talk to us” link under the “Services” menu, **but wasn't sure how to contact**.

User 4 – Tasks for a site from a Large City (Porto Alegre – State Capital of Rio Grande do Sul – South part of Brazil. Population: 1.47 Million):

- A) The user spent 35 seconds looking through the menus before scrolling down to the link for Transparency, which opened a new window. Found the information in **01:35 minute**.

- B) The user found the total information in 20 seconds, and **mistook it for the net information.**
 - C) The user navigated through 5 menus and had difficulties with acronyms for the departments. The user found the list of salaries, but in order to find the salary, the user had to select each employee. **The user gave up after 03:20 minutes.**
 - D) Found the link “Information Service to the Citizen”.
- *Tasks for a site from a Medium City* (Mossoró – in the State of Rio Grande do Norte – Northeast part of Brazil. Population: 0.23 Million):
- A) The user found the information in **01:45 minute.**
 - B) The user found the information in 20 seconds.
 - C) The user found the link for “Expenditure” but did not “see” the entire page. The user browsed 3 more links and **gave up after 07:28 minutes.**
 - D) The user found the link “Contact us”.
- *Tasks for a site from a Small City* (Macaíba – in the State of Rio Grande do Norte – Southeast part of Brazil. Population: 70,586):
- A) The user navigated 6 links and found the information after **02:00 minutes.**
 - B) The user found the information in 15 seconds.
 - C) The user found the names of the employees, **but didn’t find to which department the employee belonged.**
 - D) The user found the link “Ombudsman”, and **considered that to be the only channel.**
- User 5 – Tasks for a site from a Large City* (Goiânia – State Capital of Goiás – Central part of Brazil. Population: 1.35 Million):
- A) The user browsed the site for **02:00 minutes.** The user found the “Income” link, **which opened to empty files.**
 - B) Same as above: **the link opened to empty files.**
 - C) The user browsed 3 links, and found the page for **the total only** of the salaries.
 - D) The user **only found the link “Contact us”.**
- *Tasks for a site from a Medium City* (Alegrete – in the State of Rio Grande do Sul – South part of Brazil. Population: 171,786):
- A) The user browsed aimlessly through 7 links. The links were acronyms. **The user gave up after 06:30 minutes.**
 - B) The user found the information in 30 seconds.
 - C) The user browsed the site aimlessly and **gave up after 13:00 minutes.**
 - D) The user browsed the site for 02:45 minutes before going back to the home page. The user found a phone number and decided that that was the **only** communication channel after **05:00 minutes.**
- *Tasks for a site from a Small City* (Rondonópolis – in the State of Mato Grosso – Central part of Brazil. Population: 144,049):

- A) The user found the information after **02:50 minutes**.
- B) The user found the information in 30 seconds.
- C) The user found a link with 8 employees. The user concluded that those were all the employees for the department. To find the salary, the user had to click on each employee. **The user gave up after 02:30 minutes**.
- D) The user found the link for “Ombudsman” **only**.

5 Conclusions and Considerations

Transparency of government (money) transactions is a right that is guaranteed by the Brazilian Constitution, and regulated by law. This right is fundamental for full citizenship exercise. However, the government does not provide the municipalities with clear, precise information with which the cities should build their information systems to divulge financial statements. There are 5.562 cities in Brazil, 55% of them should divulge their data, but less than 14% of those required do so; and only 75% of those who divulge do it via Internet, as required by law.

Site overview, heuristic evaluation and end-user testing revealed that the sampled sites from small, medium and large cities of all regions of Brazil failed to provide the user with the desired information due to usability errors. This lack of usability is detrimental to full citizenship exercise. These usability errors are basic, and should not occur, especially on sites of great public importance.

Government and society must come together to fix such state of things in order to make Brazil a Transparent nation.

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